EMGS 2017 Symposium Proposal

Title: Integrated genotoxicity testing strategies: practical applications of toxicogenomics in genetic toxicology

Abstract/description:

Increasing emphasis is being placed on refining regulatory testing strategies to increase efficiencies and provide more mechanistic information to understand human health hazards and risk. Within genetic toxicology, a large amount of attention in the past several years has focused on optimizing the use of high-content and high-throughput information in parallel with standard genetox tests to provide insight into the mechanisms by which chemicals cause genotoxicity and their relevance in humans. At the 2016 meeting in Kansas City, toxicogenomics biomarkers to detect genotoxic agents were described in a variety of presentations and discussed at length in the New Technologies Special Interest Group meeting. The ability to integrate gene expression signatures as biomarkers of genotoxicity into standard (or novel) genetic toxicology testing strategies to identify molecular initiating events has emerged as an obvious immediate application that will advance this area in applied genetic toxicology. This is clearly an area of great interest to EMGS members.

This proposed symposium will focus on the integration of in vitro toxicogenomics biomarkers, in particular one known as TGx-28.65, and its use in combination with the current genetox testing battery. The TGx-28.65 biomarker serves as an interesting case study for this symposium, because it has undergone extensive validation and is in the process of formal validation through the FDA's Biomarker Qualification Program. Through this work, it is poised to become the first formally validated toxicogenomics biomarker. The symposium will begin with an introduction to the area, a description of applications of toxicogenomics in the field, the development of the TGx-28.65 biomarker, and an update on validation efforts (Jiri Aubrecht). Expanded technical applications on a variety of platforms (DNA microarrays, qPCR), including use on high-throughput technologies (RNA-seq, Nanostring), use in metabolically competent cell cultures (HepaRG), and a new publicly available tool that provides a user-friendly interface for ready application of the biomarker will be discussed (Heng Hong Li). This presentation will be followed by two speakers who will describe case examples of use/validation of toxicogenomics, and the TGx-28.65 biomarker, in industry (drug development: Proctor and Gamble) and government (environmental chemicals: Carole Yauk). The symposium will finish with a forward-looking presentation on integrated strategies for the use of toxicogenomic biomarkers in mode-of-action studies for drug development and chemical testing (Maik Schuler).

Sponsoring SIG: New Technologies and Applied Genetic Toxicology

Session proposed by:

Name: Carole Yauk
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Speaker List:

Speaker #1: Jiri Aubrecht, Pfizer
Contact info: Jiri.Aubrecht@pfizer.com
Focus area: The HESI TGx-28.65 genomic biomarker to detect DNA damage-inducing agents: development and validation status

EMGS Member: No

Speaker #2: Heng Hong Li, Georgetown University
Contact info: hl234@georgetown.edu
Focus area: Technological advances in the TGx28.65 biomarker: today, tomorrow and beyond

EMGS Member: No

Speaker #3: Carole Yauk, Health Canada
Contact info: carole.yauk@canada.ca
Focus area: Case studies on the integration of the TGx-28.65 biomarker into genetic toxicology assessment

EMGS Member: Yes

Speaker #4: Stefan Pfuhler, Ashley Sullivan or Nadira DeAbrew, Proctor and Gamble
Contact info: pfuhler.s@pg.com
Focus area: Exploring application of toxicogenomics, CMAP, and TGx-28.65 in drug development

EMGS Member: Yes

Speaker #5: Maik Schuler, Pfizer
Contact info: maik.schuler@pfizer.com
Focus area: Genetic toxicology in the 21st century: applying toxicogenomics for genetox MOA analysis

EMGS Member: Yes

NOTE – Please see attached Speaker policy.

Potential Sponsors: Genomics Committee and the Genetic Toxicology Testing Committee, Health and Environmental Sciences Institutes